

ABSTRACT

1 A current control device is described wherein a pressure conduction composite is
compressed and decompressed to alter its conductivity and thereby current conduction
through the device. The pressure conduction composite is composed of a nonconductive
5 matrix, a conductive filler, and an additive. The invention consists of electrodes and
pressure plates contacting the composite. Electrically activated actuators apply a force
onto pressures plates. Actuators are composed of a piezoelectric, piezoceramic,
electrostrictive, magnetostrictive, and shape memory alloy materials, capable of extending
and/or contracting thereby altering pressure and consequently resistivity within the
10 composite. In an alternate embodiment, two or more current control devices are
electrically coupled parallel to increase power handling.

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